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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/788,437      | 02/21/2001  | Albert M. Leung      | S168 0114 GNM/sks   | 5239             |

7590 11/06/2002  
Oyen Wiggs Green & Mutala  
#480 - The Station  
601 West Cordova Street  
Vancouver, BC V6B 1G1  
CANADA

EXAMINER

FERGUSON, MARISSA L

ART UNIT PAPER NUMBER

2855

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/788,437

Applicant(s)

LEUNG, ALBERT M.

Examiner

Marissa L Ferguson

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 8/26/2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 and 30-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 30-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 12-14, 16-19, 21, 30-32 and 36-43 are rejected under 35

U.S.C. 103(a) as being unpatentable over Fushinobu (U.S. Patent 6,127,765) in view of Smith (U.S. Patent 6,343,514).

Regarding claims 1-4, 21, 30, 31, and 41-43, Fushinobu teaches the invention claimed: pressure sensor comprising a member (22) adherent by stiction (Abstract) to a surface of the substrate (21) and the means for heating the member (23), the surface of the member in contact with the substrate (Figure 4), and the means for heating the member comprising an electrically conductive pathway and a source of electrical current (Column 3, Lines 25-48).

Regarding claims 5-, 12, 16, 32, and 36 a electrically insulating layer (34) on a surface of the member, the member comprising polysilicon and the electrically insulating layer comprising a layer of silicon dioxide (Column 3, Lines 49-67 and Column 4, Lines 1-9), and comprising an electrically insulating layer on the surface of the substrate (Column 3, Lines 59-61).

However, Fushinobu does not explicitly disclose the first and second pressure sensors arranged and first/second resistors in a Wheatstone bridge configuration, wherein the first sensor is connected between, the first input point and the first output

point the second sensor connected between the second input point, the temperature member and the surface roughness including the plateaus and valleys.

Regarding claims 1,4,13,14,19,30,32, 37 and 40, Smith discloses the first (6) and second pressure (41) sensors and first/second resistors (41-46) arranged in a Wheatstone bridge configuration (Column 8, Claims 2 and 3, Lines 41-51), wherein the first sensor is connected between, n the first input point and the first output point the second sensor connected between the second input point (Figures 3 and 4) and the temperature member (42).

With respect to claims 2,17,18, and 21, the surface roughness that comprises valleys and plateaus, it is common to have some degree of roughness due to the etching technique. Hence, a matter of experimental choice as to the exact degree of roughness.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention taught by Fushinobu to include the surface roughness, temperature member and two pressure sensors as taught by Smith for the purpose of monitoring pressure as well as recording temperature of a combined sensor device.

2. Claims 8-11 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fushinobu (U.S. Patent 6,127,765) in view of Smith (U.S. Patent 6,343,514) as applied to claims 1-7 ,12-14, 16-19, 21, and 30-32 above, further in view of Fung (U.S. Patent 5,589,810).

Fushinobu, as modified, discloses the claimed invention except the bridge extending between cantilever members, cantilever members attached to the substrate by pads, the bridge having a central collapsed portion, the pattern of plateaus and valleys, and the semiconductor wafer. Fung discloses a bridge member (16) extending between cantilever members (12 and Figure 1), cantilever members attached to substrate by pads (34,35), and the bridge having a central collapsed portion (Column 5, Claim 1) the pattern of plateaus (305) and valleys (Column 3, Lines 30-64) and semiconductor wafer (101) having a surface.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention taught by Fushinobu, to include, of Gogoi et al., for the purpose of improving the accuracy of capacitance, to include the bridge extending between cantilever members, cantilever members attached to the substrate by pads, the bridge having a central collapsed portion, the pattern of plateaus and valleys, and the semiconductor wafer as taught by Fung, for the purpose of improving semiconductor pressure sensors that requires high temperature stability.

3. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (U.S. Patent 6,343,514) in view of Gogoi et al. (U.S. Patent 6,156,585) and Fung (U.S. Patent 5,589,810) as applied to claims 1-14, further in view of Black et al (U.S. Patent 4,463,336).

Smith et al., as modified, discloses the claimed device except metallic masking layer, and p-n junctions. Black discloses metallic masking layer (Column 3, 67-68 and Column 4, Lines 1-19) and p-n junctions (Column 3, Lines 22-25).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the device of Smith, as modified, to include the metallic masking layer and p-n junctions, as per the teachings of Black, for the purpose of manufacturing ultra-thin microelectronic pressure sensors.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-21 and 30-43 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa L Ferguson whose telephone number is (703) 305-3194. The examiner can normally be reached on (M-T) 6:30am-4:00pm and every other(F) 7:30am-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Art Unit: 2855

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Marissa L Ferguson  
Examiner  
Art Unit 2855

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November 1, 2002

A handwritten signature in black ink, appearing to read 'M. Noori', written in a cursive style.

**MAX NOORI**  
**PRIMARY EXAMINER**